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- (71) Applicant (for all designated States except US): **THE GOVERNMENT OF THE UNITED STATES OF AMERICA AS REPRESENTED BY THE SECRETARY OF THE NAVY** [US/US]; Naval Research Laboratory, 4555 Overlook Ave, SW, Code 1008.2, Washington, DC 20375 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LOU, Janet, W.** [US/US]; 7364 Hunter Oak Court, Springfield, VA 22105 (US). **VILLARRUEL, Carl, A.** [US/US]; 9998 Hemlock Woods Lane, Burke, VA 22015 (US). **SCHERMER, Ross** [US/US]; 8328 Garfield Court, Springfield, VA 22152 (US).
- (74) Agent: **RESSING, Amy, L.**; Us Naval Research Laboratory, 4555 Overlook Ave, SW, Washington, DC 20375 (US).

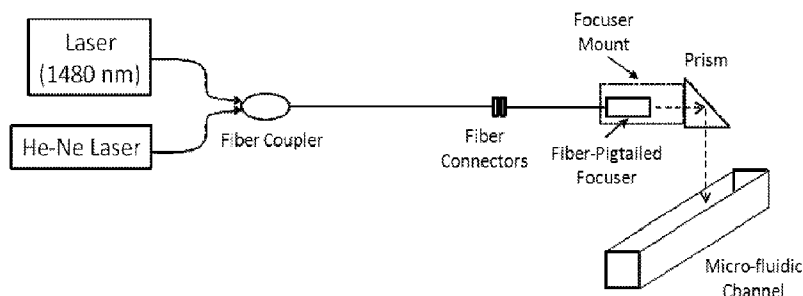
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(54) Title: METHOD OF CHANGING FLUID FLOW BY USING AN OPTICAL BEAM



(57) Abstract: The application of an optical beam redirects sheathed micro-fluidic flow without direct interaction with the sample. The hydrodynamic properties of the sheath are locally modified due to optical absorption and heating, resulting in a spatial shift of the sample flow. The technique can result in up to 100  $\mu\text{m}$  shift at peak flow velocities of 19 mm/sec.

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2012/035250****A. CLASSIFICATION OF SUBJECT MATTER****G01N 35/08(2006.01)i, G01N 1/10(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G01N 35/08; G02B 6/35; G02B 6/26; G02B 27/00; G01N 21/00; G01N 33/53

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: focused flow, core stream, sheath flow, optical beam, heating, shift

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                              | Relevant to claim No. |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| A         | US 2002-0181837 A1 (WANG, MARK et al.) 05 December 2002<br>See abstract; paras. 38-39, 47-49, 53; claims 1-4, 12, 17; figs. 1-2.                                | 1-18                  |
| A         | US 2005-0207940 A1 (BUTLER, WILLIAM FRANK et al.) 22 September 2005<br>See abstract; paras. 34-35, 38-40, 45; claims 1, 4; figs. 1-2, 4.                        | 1-18                  |
| A         | US 04893886 A (ASHKIN, ARTHUR et al.) 16 January 1990<br>See abstract; col. 1, lines 64-66, col. 2, lines 26-29, col. 3, lines 23-24, 49-51, 57-61; claims 1-2. | 1-18                  |
| A         | US 2002-0122618 A1 (KIM, SUNG-CHUL) 05 September 2002<br>See abstract; paras. 11, 13, 23; claims 1, 17-18.                                                      | 1-18                  |
| A         | US 2002-0176069 A1 (HANSEN, W. PETER et al.) 28 November 2002<br>See abstract; paras. 66-67; figs. 2, 13.                                                       | 1-18                  |



Further documents are listed in the continuation of Box C.



See patent family annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                                                                                                                                                                  | Publication<br>date                                                                                                                                                  |
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